A.D. 1862, 13*th Mar.* N° 1438.

SPECIFICATION

OF

ARTHUR WORMULL.

TREPANNING INSTRUMENTS.

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:
PUBLISHED AT THE GREAT SEAL PATENT OFFICE,
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1862.

A.D. 1862, 13th *May.* N° 1438.

Trepanning Instruments.

LETTERS PATENT to Arthur Wormull, of Old Fish Street, in the City of London, Surgical Instrument Maker, for the Invention of "IMPROVEMENTS IN TREPANNING INSTRUMENTS."

Sealed the 4th November 1862, and dated the 13th May 1862.

PROVISIONAL SPECIFICATION left by the said Arthur Wormull at the Office of the Commissioners of Patents, with his Petition, on the 13th May 1862.

I, ARTHUR WORMULL, of Old Fish Street, in the City of London, Surgical Instrument Maker, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN TREPANNING INSTRUMENTS," to be as follows:—

My Invention of improvements in trepanning instruments consists in constructing the instrument in such a manner that the cutting tool may have the required rotary motion communicated to it by means of some convenient mechanical arrangement of gearing, instead of this motion being given by the wrist of the operator, as heretofore.

In carrying out my Invention, the rotary cutting tool (of which there may be various sizes adapted to one instrument) is adapted to the lower end of a tubular shaft, which carries at its upper end a toothed wheel, which is driven by a pinion on a spindle mounted in bearings in the stationary part of the instrument. This spindle projects from the inside through the hollow case of the instrument, and is provided with a winch handle or a universal joint and

handle, whereby it may be turned by means of the right hand of the operator, while the left hand of the operator is employed to hold down the instrument by pressing on a knob at the top. A central spindle or pivot provided with a sharp point round which the cutting tool rotates, passes down the centre of the instrument. This central spindle is adjustable in the line of its axis by means of a rack and pinion inside, the latter of which is actuated by means of a thumb nut or milled head outside.

It will be evident that other mechanical contrivances equivalent to those above described may be employed to effect the required motions. I, however, prefer those above mentioned as being the most convenient.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Arthur Wormull in the Great Seal Patent Office on the 13th November 1862.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, ARTHUR WORMULL, of Old Fish Street, in the City of London, Surgical Instrument Maker, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Thirteenth day of May, in the year of our Lord One thousand eight hundred and sixty-two, in the twenty-fifth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Arthur Wormull, Her special license that I, the said Arthur Wormull, my executors, administrators, and assigns, or such others as I, the said Arthur Wormull, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN TREPANNING INSTRUMENTS," upon the condition (amongst others) that I, the said Arthur Wormull, by an instrument in writing under my hand and seal, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Arthur Wormull, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the

following statement, reference being had to the Drawing hereunto annexed, and to the letters and figures marked thereon (that is to say):—

My Invention of "Improvements in Trepanning Instruments" consists in constructing these instruments in such a manner that the cutting tool may have the required rotary motion communicated to it by means of some convenient mechanical arrangement of gearing, instead of this motion being given by the wrist of the operator, as heretofore.

The several Figures in the accompanying Drawing represent various views of one of my improved instruments. Fig. 1 is a side elevation; and Fig. 2, a vertical section of the same.

The instrument is so constructed that cutting tools of various sizes may be adapted to the same instrument, and are secured thereto by a temporary fastening. *a* is the circular cutting tool, which is secured to the lower end of a tubular shaft *b* by means of a bayonet joint, as shewn in the detached sectional view, Fig. 3, and plan view, Fig. 4. The tubular shaft *b* carries at its upper end a toothed wheel *c*, Fig. 2, which is driven by a pinion *d*, on a spindle d^1, mounted in bearings in the stationary part of the instrument. This spindle projects from the inside through the hollow case of the instrument, and is provided with a winch handle or common crank *e*, Fig. 2, or a jointed rod and handle in combination with a universal joint, as seen at *e* in Fig. 1. By this arrangement of parts the spindle and its pinion *e* may be turned by means of the right hand of the operator, while his left hand is employed to hold down the instrument by pressing on a knob *f* at the top of the fixed part b^x or tubular case of the instrument. A central spindle or pivot *g*, Fig. 2, provided with a sharp point g^1, round which the cutting tool *a* rotates, passes down the centre of the instrument, and is adjustable up or down in the instrument in the line of its axis by means of a rack which is formed on its upper part. A pinion *h*, inside the instrument, gears into this rack, and is actuated by means of a thumb nut or milled head h^1, Fig. 1, outside. The tubular shaft *b*, which carries the cutting tool *a*, is secured to the fixed part b^x of the instrument by means of a collar *i*, which is screwed on to a tubular prolongation of the piece b^x, and bears against a shoulder or recess cut in the lower end of the tubular shaft *b*, as seen in the sectional views.

The mode of operating with the instrument is as follows:—The central point g^1 is adjusted by means of the rack and pinion *h*, until its point projects beyond the lower edge of the teeth of the cutting instrument just sufficiently to form a firm central pivot, round which the cutting tool *a* may be rotated by means of the winch handle and toothed gear *c* and *d*. In order to cause the point g^1 to rotate with the cutting tool *a*, part of the side of the spindle *g* is

cut away, so as to form a flat side, which passes through a hole of a corresponding shape formed in a disc *j*, which is secured to the lower end of the tubular shaft *b* by means of screws, as seen in the sectional plan views, Figs. 5 and 6. It will therefore be understood that as the disc *j* is secured to the tubular shaft *b* and moves round with it, the spindle *g* must also be carried round with it. The point g^1 having been properly adjusted, the operator places it firmly on the central part of the piece of bone that it is desired to cut out or remove; then, while bearing firmly on the top *f* of the instrument with the left hand, so as to keep it steady, he turns the winch or crank *e*, so as to cause the teeth of the tool *a* to cut into the bone, and as this proceeds, the point g^1 will be lowered with the tool *a* further into the bone by boring its own central hole. By turning from time to time the milled head h^1 of the pinion *h*, the point may be adjusted with nicety.

It will be evident that other mechanical arrangements equivalent to those above described may be employed to effect the required motions; I, however, prefer those above mentioned as being the most convenient.

Having now described my Invention of "Improvements in Trepanning Instruments," and having explained the manner of carrying the same into effect, I claim as the Invention secured to me by Letters Patent as aforesaid, arranging the cutting tools of trepanning instruments in such a manner that motion may be communicated to them by means of toothed gearing, instead of effecting this object by the wrist of the operator, as heretofore.

In witness whereof, I, the said Arthur Wormull, have hereunto set my hand and seal, this Twelfth day of November, in the year of our Lord One thousand eight hundred and sixty-two.

ARTHUR WORMULL. (L.S.)

Witness,

J. W. MOFFATT,

66, Chancery Lane.

LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1862.

FIG. 1.

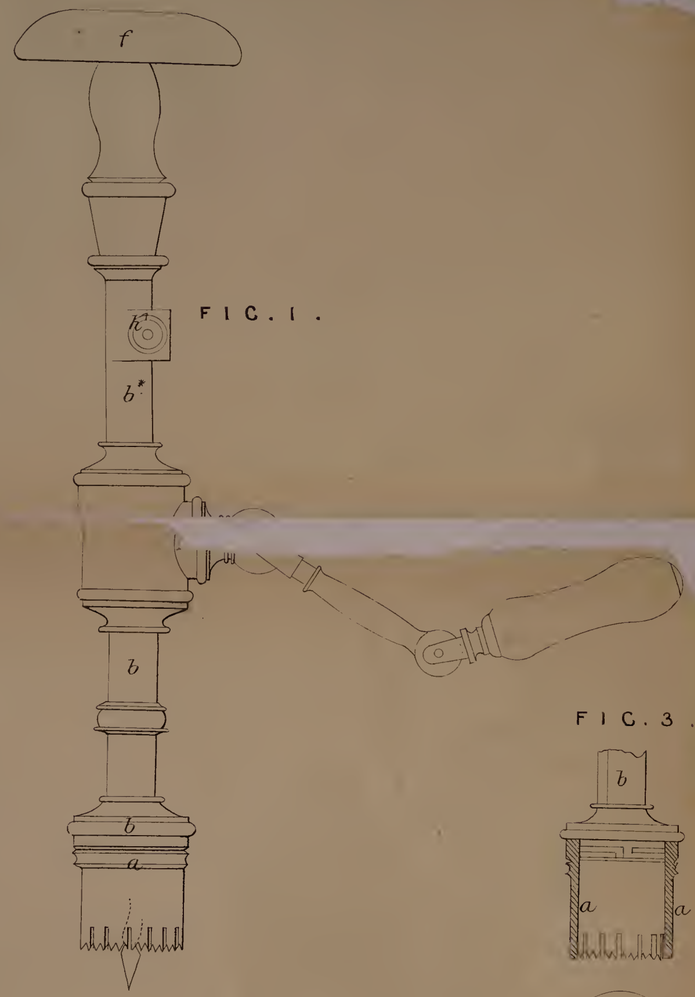

FIG. 2.

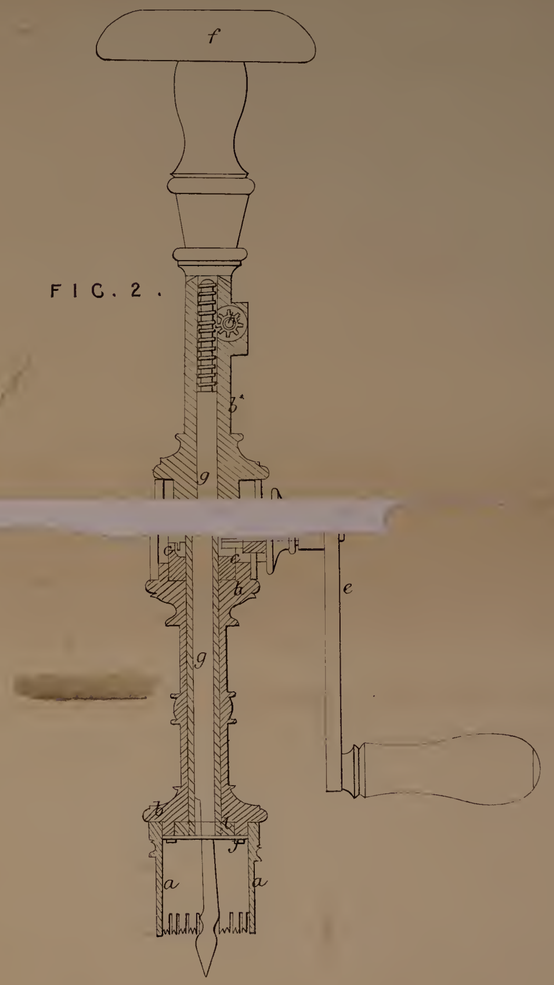

FIG. 3.

FIG. 4.

FIG. 5.

FIG. 6.

Drawn on Stone by Malby & Sons.

The filed drawing is partly colored

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Printers to the
d William Spottiswoode.
Majesty. 1862.